

REMARKS

Claims 13, 14, and 16-26 are pending and under current examination. For the reasons presented herein, Applicants traverse the rejections set forth in the Office Action¹, which:

- (a) rejected claims 13, 14, and 18-20 under 35 U.S.C. § 103(a) as being unpatentable over WO 00/00868 ("Chou") in view of U.S. Patent App. Pub. No. 2003/0056855 ("Weimer") and U.S. Patent No. 4,120,995 ("Phipps");
- (b) rejected claim 17 under 35 U.S.C. § 103(a) as being unpatentable over Chou in view of Weimer and Phipps, and further in view of Mattox, *Handbook of Deposition Technologies...*, Chapter 3 ("Mattox") and Jaszewski et al., Microelectronic Engineering 35 (1997) 381-384 ("Jaszewski");
- (c) rejected claims 21, 22, and 25 under 35 U.S.C. § 103(a) as being unpatentable over Chou in view of Phipps; and
- (c) rejected claims 23, 24, and 26 under 35 U.S.C. § 103(a) as being unpatentable over Chou in view of Phipps, and further in view of U.S. Patent No. 6,380,101 ("Breen").

Rejection of Claims 13, 14, and 18-20 under 35 U.S.C. § 103(a):

Applicants request reconsideration and withdrawal of the rejection of claims 13, 14, and 18-20 under 35 U.S.C. § 103(a) as being unpatentable over Chou in view of Weimer and Phipps.

The Office Action has not properly resolved the *Graham* factual inquiries, the proper resolution of which is the requirement for establishing a framework for an objective obviousness analysis. See M.P.E.P. § 2141(II), citing to *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), as reiterated by the U.S. Supreme Court in *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, 82 USPQ2d 1385 (2007).

In particular, the Office Action has not properly determined the scope and content of the prior art. Specifically, Chou, Weimer, and Phipps, whether taken alone or in any combination.

¹ The Office Action contains statements characterizing the related art and the claims. Regardless of whether any such statements are specifically identified herein, Applicants decline to automatically subscribe to any statements in the Office Action.

do not teach or suggest what the Office Action attributes to them. In addition, the Office Action has not properly ascertained the differences between the claimed invention and the prior art, at least because it has not interpreted the prior art and considered both the invention and the prior art as a whole. See M.P.E.P. § 2141(II)(B).

As the Office Action recognizes, “Chou fails to specifically teach the process of applying the metal layer, oxidizing the layer of metal to form an oxide film and then applying the reagent on the oxide film.” Office Action, p. 2. Chou discloses that “[t]he mould surfaces to be used may be any surface to which the release providing molecules may bond. By selecting appropriate release providing molecules, substantially any release surface may be used. The release surface maybe be metallic, semimetallic, metal oxides, metal and....” Chou, p. 10, lines 3-6.

In contrast to Chou, claim 13 recites “...applying at least one reagent on the oxide film, said reagent comprising molecule chains, each having a linkage group, which is chemically bonded with the oxide film....” Thus, the reagent does not bind to the surface of the mould and therefore there is no need for Chou’s “appropriate release providing molecules” for reacting with the surface. Instead, claim 13 recites “...depositing a layer of a metal chosen from titanium, zirconium, niobium, tantalum, and aluminium, and mixtures thereof, on the patterned surface, said metal having a stable oxidation number.” After the claimed “oxidising the layer of metal to form a mechanically stable oxide film,” the “at least one reagent [applied] on the oxide film” will chemically react with the oxidised surface of the metal layer (i.e., “chemically bonded with the oxide film” (claim 13).

Moreover, Chou differs from claim 13 in that Chou defines the assembly of its mould, and additionally the mould surface, in conjunction with its description of Fig. 1A, including

different constituents of the mould. *See Chou*, Fig. 1, p. 11, lines 16-19 and 25-27, and p. 12, lines 13 and 24. It appears that *Chou* describes constituent 10 as the mould, constituent 12 as the body of the mould, and constituent 14 as the moulding layer or the moulding surface. On p. 11, lines 28-30, *Chou* discloses that “[m]oulding layer 14 is shown as including a plurality of features 16 having a desired shape. A release layer 17 is shown bonded to the surface of the features 16 on the molding layer 14.”

In contrast to claim 13, *Chou*'s moulding layer 14 comprises a pattern (i.e., features 16 in Fig. 1) to which the release layer is directly bonded. The pattern is defined with the help of lithographic methods or reactive ion etching (“RIE”). *See Chou*, p. 12, lines 24-26. This does not constitute claim 13's recitation of “depositing a layer of a metal chosen from titanium, zirconium, niobium, tantalum, and aluminium, and mixtures thereof, on the patterned surface [of the stamp blank], said metal having a stable oxidation number,” whereby the claimed “layer of a metal” links “at least one reagent on the oxide film” (i.e., the oxidised surface of the metal layer) after “oxidising the layer of metal to form a mechanically stable oxide film.” *Chou* does not teach or suggest at least the claimed “depositing a layer of a metal” or the related claimed method steps.

Chou also describes the mould material in general and, in a particular experiment, “mold 10 consists of a layer 14 and features 16 of silicon dioxide on a silicon substrate 12” with the help of lithographic methods. *Chou*, p. 12, lines 31-33. *See also Chou*, p. 12, lines 24-33.

Therefore, *Chou* does not teach or suggest at least “...depositing a layer of a metal chosen from titanium, zirconium, niobium, tantalum, and aluminium, and mixtures thereof, on the patterned surface, said metal having a stable oxidation number,” “oxidising the layer of metal to form a mechanically stable oxide film,” and the “at least one reagent [applied] on the oxide

film" to chemically react with the oxidised surface of the metal layer (i.e., "chemically bonded with the oxide film" (claim 13).

Weimer does not cure Chou's deficiencies. The Office Action relies on Weimer to teach "a process of applying a substrate to an element, the substrate formed of an alloy that can include titanium, zirconium, and chromium, see [0024]." Office Action, p. 2. While Weimer teaches a process to produce a metal oxide film, it does not teach or suggest linking reagents to the produced oxide film. *See Weimer*, Abstract.

Further, the Office Action's reasoning for applying Weimer is misplaced at least because Weimer is nonanalogous art. According to the Office Action, "processes of applying and oxidizing to form a 'mechanically stable' oxide film is known, especially since it is known to have an oxide film to prevent corrosion on a surface, such as for gas turbines [as taught by Weimer]." Office Action, p. 7. Weimer is nonanalogous art at least because it "relates to gas turbine engines and, more particularly, to the fabrication of the turbine disks and seals, and their protection against oxidation and corrosion." Weimer, ¶ [0001].

In order to rely upon a reference under § 103, the reference must be analogous prior art. See M.P.E.P. § 2141.01(a); *see also In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). The Federal Circuit uses a two-criteria test to determine if prior art is analogous: "(1) whether the art is from the same field of endeavor, regardless of the problem addressed and, (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved." *In re Bigio*, 381 F.3d 1320, 1325, 72 USPQ2d 1209, 1211-1212 (Fed. Cir. 2004).

Weimer is not in the same field of endeavor as the present application, and is also not reasonably pertinent to the particular problem addressed by Applicants. Weimer therefore would

not logically have commended itself to an inventor's attention in the nano-imprinting field when considering the problems associated with a "method for manufacturing a mold tool adapted to be used for forming a structured nano scale pattern on an object," according to claim 13. Weimer thus should be regarded as nonanalogous art and should not be used as a reference against the present application under 35 U.S.C. § 103(a).

The Office Action then relies on Phipps for teaching "a process of bonding a durable low surface energy coating to a metal or oxide surface, the coating being a fluorinated alkyl group ... which also includes a silane group." Office Action, p. 3. As discussed with respect to Chou above, however, the molecules taught by Phipps also do not bind with the mould surface directly, so the molecules do not form a layer exhibiting mechanical strength. That is, Phipps also does not teach or suggest at least the claimed "oxidising the layer of metal to form a mechanically stable oxide film" (claim 13), and therefore also does not teach or suggest "*depositing a layer of a metal chosen from titanium, zirconium, niobium, tantalum, and aluminium, and mixtures thereof, on the patterned surface, said metal having a stable oxidation number*" (claim 13, emphases added).

In view of the reasoning presented above, Applicants submit that independent claim 13 is not obvious over Chou, Weimer, and Phipps, whether taken alone or in any combination, at least because the Office Action has neither properly determined the scope and content of the prior art, nor properly ascertained the differences between the prior art and the claimed invention. Moreover, because Weimer is nonanalogous art, the rejection cannot be logically sustained with recognition of Chou's deficiencies and Phipps's application on top of nonanalogous Weimer. Independent claim 13 should therefore be allowable. Dependent claims 14 and 18-20 should

also be allowable, at least by virtue of their dependence from base claim 13. Accordingly, Applicants request withdrawal of the 35 U.S.C. § 103(a) rejection.

Rejection of Claims 21, 22, and 25 under 35 U.S.C. § 103(a):

Applicants request reconsideration and withdrawal of the rejection of claims 21, 22, and 25 under 35 U.S.C. § 103(a) as being unpatentable over Chou in view of Phipps.

For the reasons discussed in the previous section, Chou, taken alone or in combination with any of the other cited references, does not render obvious Applicants' independent claim 13. Independent claim 21, while of different scope, contains recitations similar to those in claim 13 and therefore Chou and Phipps, taken alone or in any combination, do not render obvious independent claim 21, or claims 22 and 25, which depend from claim 21.

For at least the above reasons, Applicants' independent claim 21, and dependent claims 22 and 25, are nonobvious over Chou and Phipps, taken alone or in any combination, and these claims should therefore be allowable. Accordingly, Applicants request withdrawal of the 35 U.S.C. § 103(a) rejection.

Remaining 35 U.S.C. § 103(a) Rejections of Dependent Claims 17, 23, 24, and 26:

Applicants request reconsideration and withdrawal of the remaining rejections of claims 17, 23, 24, and 26 under 35 U.S.C. § 103(a) as being unpatentable over one or more of Chou, Weimer, Phipps, Mattox, Jaszewski, and Breen, taken alone or in any combination.

For the reasons discussed previously, Chou, taken alone or in combination with any of the other cited references, does not render obvious Applicants' independent claims 13 and 21.

The addition of Mattox, Jaszewski, and Breen does not alter the reasoning previously presented, and Applicants submit that the reasoning of record against these references is still valid and on point. *See* Amendment filed on May 27, 2008 at pp. 13-14; *see also* Request for

Reconsideration filed on December 4, 2008 at pp. 3-6. Therefore, arguments against Mattox, Jaszewski, and Breen are not repeated herein.

For at least the above reasons, Applicants' dependent claims 17, 23, 24, and 26 are nonobvious over Chou, Weimer, Phipps, Mattox, Jaszewski, and Breen, taken alone or in any combination, as well as because of their dependence from base claim 13 or 21. These claims should therefore be allowable. Applicants therefore respectfully request withdrawal of the remaining 35 U.S.C. § 103(a) rejections.

Conclusion:

Applicants request reconsideration of the application and withdrawal of the rejections. Pending claims 13, 14, and 16-26 are in condition for allowance, and Applicants request a favorable action.

If there are any remaining issues or misunderstandings, Applicants request the Examiner telephone the undersigned representative to discuss them.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

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By: David M. Longo
David M. Longo
Reg. No. 53,235

/direct telephone: (571) 203-2763/